Deficits in reinforcement learning but no link to apathy in patients with schizophrenia

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Abstract: Negative symptoms in schizophrenia have been linked to selective reinforcement learning deficits in the context of gains combined with intact loss-avoidance learning. Fundamental mechanisms of reinforcement learning and choice are prediction error signaling and the precise representation of reward value for future decisions. It is unclear which of these mechanisms contribute to the impairments in learning from positive outcomes observed in schizophrenia. A recent study suggested that patients with severe apathy symptoms show deficits in the representation of expected value. Considering the fundamental relevance for the understanding of these symptoms, we aimed to assess the stability of these findings across studies. Sixty-four patients with schizophrenia and 19 healthy control participants performed a probabilistic reward learning task. They had to associate stimuli with gain or loss-avoidance. In a transfer phase participants indicated valuation of the previously learned stimuli by choosing among them. Patients demonstrated an overall impairment in learning compared to healthy controls. No effects of apathy symptoms on task indices were observed. However, patients with schizophrenia learned better in the context of loss-avoidance than in the context of gain. Earlier findings were thus partially replicated. Further studies are needed to clarify the mechanistic link between negative symptoms and reinforcement learning.

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Corrigendum: Deficits in reinforcement learning but no link to apathy in patients with schizophrenia

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